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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,356	02/06/2002	Reo Yamamoto	1217-020120	9937

7590

04/24/2003

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EXAMINER

TALBOT, BRIAN K

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 04/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,356

Applicant(s)

YAMAMOTO ET AL.

Examiner

Brian K Talbot

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 06 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other: _____

1. The pre-amendment filed 2/6/02 has been considered and entered. Claims 9-14 have been added. Claims 1-14 remain in the application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, the claim recites two shrinkage factors (X_v and X_s). How can the shrinkage factor be referenced by two different reference characters? Clarification regarding these two factors is appreciated.

With respect to claim 2, the claim is confusing. The claim recites "highly isolated" and "densely present" which are unclear. Clarification is requested.

With respect to claims 3-4, the claims are confusing. The phrase "whose volumes sum into 0.9% or less of a whole volume within the radius" is unclear. What is the volume sum? What "whole volume"? Clarification is requested.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-107,437 or JP 2986596B2.

JP 10-107,437 or JP 2986596B2 both teach forming a ceramic board having through holes therein whereby two sets of via holes are formed, one being "good" via holes and the other being "dummy" via holes. The dummy via holes being removed after conductor coating is filled in both sets of holes (see abstract).

JP 10-107,437 or JP 2986596B2 fail to teach the substrate being an aluminum nitride.

While the Examiner acknowledges this fact, it is the Examiner position that the use of aluminum nitride as a ceramic base for circuit board manufacturing is commonplace in the art and one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving similar results regardless of the material utilized for the substrate.

With respect to claim 1 and the limitation of shrinkage of the paste and the aluminum nitride, it is the Examiner's position that these characteristics are inherent to all materials and hence would be met by the prior art.

With respect to claims 3 and 4, the claims are silent with respect to the spacing of the "good" via holes and the "dummy" via holes. It is the Examiner's position that the limitation of location of the "good" and "dummy" via holes is a matter of design choice of a practitioner in the art and hence is deemed as an obvious modification of the prior art absent a showing of criticality.

Claims 7,8,13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-107,437 or JP 2986596B2 in combination with Yamamoto et al. (6,475,924 B2).

JP 10-107,437 or JP 2986596B2 fail to teach the claimed conductive composition and the subsequent de-waxing and firing parameters.

Yamamoto et al. (6,475,924 B2) teaches filling through holes of an aluminum nitride molded article with a composition comprising a refractory paste, aluminum powder and an organic binder, dewaxing the molded article and firing in a two step process (see abstract)

Therefore, it would have been obvious at the time the invention was made to have modified JP 10-107,437 or JP 2986596B2 process by utilizing the conductive coating composition, dewaxing and firing steps as evidenced by Yamamoto et al. (6,475,924 B2) with the expectation of achieving similar success.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (6,475,924 B2) in combination with JP 10-107,437 or JP 2986596B2.

Yamamoto et al. (6,475,924 B2) teaches filling through holes of an aluminum nitride molded article with a composition comprising a refractory paste, aluminum powder and an organic binder, dewaxing the molded article and firing in a two step process (see abstract)

Yamamoto et al. (6,475,924 B2) fails to teach forming "dummy" holes in the substrate.

JP 10-107,437 or JP 2986596B2 both teach forming a ceramic board having through holes therein whereby two sets of via holes are formed, one being "good" via holes and the other being "dummy" via holes. The dummy via holes being removed after conductor coating is filled in both sets of holes (see abstract).

Therefore, it would have been obvious at the time the invention was made to have modified Yamamoto et al. (6,475,924 B2) by incorporating "dummy" holes as evidenced by JP 10-107,437 or JP 2986596B2 because of the advantages associated with their use such as reducing warping and resistance upon subsequent firing.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Talbot whose telephone number is (703) 305-3775. The examiner can normally be reached on Monday-Friday 6AM-3PM.

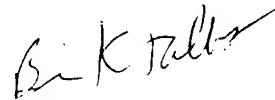
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3775.



Brian K Talbot
Primary Examiner
Art Unit 1762

BKT
April 22, 2003